Langan
Engineering and Environmental Services, Inc.

100487

ORIGINAL
(Red)

15 August 1995
2061601

Chief William Bell
Chief of Communications for Public Safety
3601 North DuPont Highway
Wilmington, DE 19720

Re: Halby Chemical Superfund Site
Wilmington, New Castle County, Delaware
Notification of Work

Dear Chief Bell:

Langan Engineering and Environmental Services, Inc., (Langan) will be working at the Halby Chemical Superfund Site, located off of Terminal Avenue, adjacent to I 495. The purpose of this letter is to advise you that we will be working at the site beginning August 21, 1995. Site security is to be implemented for the Drainage Area where EPA recently encountered carbon disulfide and other contaminants.

A copy of the Drainage Area Site Security Plan, and Health and Safety Plan is provided for your information.

Follow-up activities will include test pit exploration to define the extent of contamination and ultimately a corrective action.

If you have any questions, please give me a call.

Very truly yours,

LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

William F. Mercurio

William F. Mercurio, P.E.
Vice President

WFM:gr
20616:bell.ltr
cc: Eric Newman
Jane Biggs-Sanger
Raj Vyas, w/o encl.
Jim Nortz, Esq., w/o encl.
Jack Phillips, Esq., w/o encl.

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DRAINAGE AREA
SITE SECURITY PLAN

Halby Chemical Superfund Site
Wilmington, New Castle County, Delaware

Prepared For:

Witco Corporation
One American Lane
Greenwich, Connecticut 06831

Prepared By:

Langan Engineering and Environmental Services, Inc.
River Drive Center 1
Elmwood Park, New Jersey 07407

15 August 1995
2061601

Langan
Engineering and Environmental Services, Inc.

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1.0 INTRODUCTION

The site security measures that will be implemented during the Response Action for Stage I will minimize exposure to hazardous chemicals in the drainage ditch. Site security will consist of a chain link fence placed around the drainage ditch.

2.0 HEALTH AND SAFETY REQUIREMENTS

Health and Safety Procedures will be in accordance with the Site Specific Health and Safety Plan, dated 8 August 1995. The fence is generally located beyond the extent of contamination. Since no extensive intrusive work is to be performed it is expected that Level D requirements will apply. If monitoring indicates the need to upgrade requirements, all work will cease, workers will leave the area and not return until additional safety requirements are implemented.

3.0 EXISTING CONDITIONS

The drainage ditch is not visible from the entrance road. There is no convenient access. Access is either through Brandywine Chemicals property or off of the Conrail right-of-way. The outlet for the drainage ditch has been blocked by an earthen berm. Some water collects in the ditch as a result of rainfall runoff.

4.0 SITE SECURITY CONSTRUCTION

Site security for the drainage ditch will consist of a chain link fence. The fence will be 6 ft. high with barbed wire. The gates will be fabricated off site and delivered to the site.

Signs will be posted every 50 feet. The signs will state "Danger Environmental Hazard Unauthorized Personnel Keep Out".

5.0 NOTIFICATION

The respondent will be responsible for monitoring and maintaining the security of the site.

The EPA, DNREC, local Police Department, Fire Department and property owners will be notified prior to implementing site security.

The area where security will be implemented belongs to Brandywine Chemical Company and/or Conrail, however as noted above security is the responsibility of the Respondent.

The Contractor (Langan Engineering and Environmental Services, Inc.) in particular, William F. Mercurio, Project Director can be contacted to identify security problems at the site. During normal business hours he can be reached at (201) 794-6900. During off hours his

home telephone number is (908) 254-8430. An alternate contact for Langan is our Corporate Health and Safety Officer Robert Koto. His home telephone number is (201) 805-6294.

If there has been unauthorized entry onto the area where security is being implemented. The local Police Department will be contacted.

Any security problems will be identified to EPA and DNREC.

20616:ssplan.rpt

SITE SPECIFIC HEALTH AND SAFETY PLAN
HALBY CHEMICAL SITE
WILMINGTON, NEW CASTLE COUNTY, DELAWARE

Prepared For:

Witco Corporation
One American Lane
Greenwich, Connecticut 06831

Prepared By:

Langan Engineering and Environmental Services, Inc.
River Drive Center 1
Elmwood Park, New Jersey 07407

8 August 1995
2061601

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ACRONYMS

ANSI	American National Standard Institute
CaPAHs	Carcinogenic Polynuclear Aromatic Hydrocarbons
CRZ	Contamination Reduction Zone
EZ	Exclusion Zone
HASP	Health and Safety Plan
IDLH	Immediately Dangerous to Life and Health
LEL	Lower Explosive Limit
NRR	Noise Reduction Rating
OSHA	Occupational Safety and Health Administration
PID	Photoionization Detector
PPE	Personal Protective Equipment
SC	Supervising Contractor
SVOCs	Semi-Volatile Organic Compounds
SZ	Support Zone
TLVs	Threshold Limit Values
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

ABBREVIATIONS

mg/m^3	Milligrams per Cubic Meter
ppm	Parts Per Million

SITE SPECIFIC HEALTH AND SAFETY PLAN
HALBY CHEMICAL SITE
WILMINGTON, NEW CASTLE COUNTY, DELAWARE

1.0 INTRODUCTION

1.1 Purpose of this Plan

Langan Engineering and Environmental Services, Inc. (Langan) has prepared this Site-Specific Health and Safety Plan (HASP) to address the safety issues that may arise as a result of proposed Stage I sampling and investigative activities at the Halby Chemical Site, Wilmington, New Castle County, Delaware. The location of the Halby Chemical Site is shown on Figure 1 and the route to the nearest hospital is shown on Figure 2. The content of the HASP may change or undergo revision based upon additional information, monitoring results or changes in the technical scope of work.

This HASP has been developed in accordance with the Occupational Safety and Health Administration (OSHA) regulation, Title 29, Code of Federal Regulations, Part 1910 (29 CFR 1910.120), "Hazardous Waste Operations and Emergency Response, and Part 1926 (29 CFR 1926 Subpart P), "Excavations". This HASP establishes procedures and provides protocols to minimize potential hazards to Supervising Contractor (SC) employees during proposed sampling and investigative activities. Certain discrete site activities such as site surveying and walk throughs will be considered to be "non-hazardous" in nature. This HASP identifies these activities and establishes procedures and provides protocols to minimize potential hazards. This HASP will be available for review by subcontractors regarding the potential hazards on-site. Upon review of this plan, the subcontractors may decide to follow this plan or to generate their own HASP.

1.2 Site Description

The Halby Chemical site, encompassing 14 acres, is located in southeastern Wilmington, New Castle County, Delaware. The triangular property is bordered by

Interstate 495 on the northwest, Conrail railroad track on the east, and Terminal Avenue on the southwest.

There are two operable units at the Halby Chemical Site. Operable Unit 1 (OU-1) was identified as the soil in the former process plant area. Operable Unit 2 (OU-2) was identified as all groundwater at the site; along with soil, surface water, sediment which are outside the limits of OU-1.

During the Removal Action performed by the United States Environmental Protection Agency (USEPA) beginning 3 February 1995 and ending 1 August 1995, some of the soil and sediments associated with the Site's drainage system, which includes a sump, discharge pipes, a ditch, and a former lagoon were found to be significantly contaminated with hazardous substances that exhibited Resource Conservation and Recovery Act (RCRA) hazardous characteristics of ignitability, reactivity, and/or corrosivity.

2.0 RESPONSIBILITIES

The proper implementation of this HASP and the prevention of adverse health effects and injuries to site workers depends on the participation of all project members. A definition of the responsibilities of the project team with respect to health and safety issues is provided in the following subsections.

2.1 Project Health and Safety Officer

The Project Health and Safety Officer is responsible for the technical coordination of the health and safety program, including medical and training requirements, hazard assessment, air monitoring, personal protective equipment (PPE), and field implementation. The Project Health and Safety Officer will interact directly with the Project Manager and provide the Site Safety Officer with details concerning any change in the site characterization and health and safety program requirements.

2.2 Site Safety Officer

The Site Safety Officer is responsible for the implementation of the proper procedures described in this HASP. In the event the Site Safety Officer has to leave the site for any reason, an alternate Site Safety Officer, who is also familiar with the established procedures of this HASP, will be designated. The Site Safety Officer will conduct daily tailgate safety meetings to discuss the hazards associated with tasks to be performed that day and the necessary PPE.

2.3 Field Team Members

The field team members are responsible for implementing the HASP under the supervision of the Site Safety Officer.

2.4 Project Manager

The Project Manager is ultimately responsible for ensuring that project team members abide by the requirements set forth in this HASP. The Project Manager will inform and discuss any changes in the scope of work and HASP requirements with the Project Health and Safety Officer and the Site Safety Officer.

3.0 PLANNED SITE ACTIVITIES

The activities addressed in this HASP include:

- Soils/Sediment Sampling
- Test Pits and Excavations
- Surveying
- Site Walk Throughs

This HASP address activities which are considered to be field oriented. The health and safety protocols that Langan considers essential for the completion of these activities, based on the available information are included in this HASP.

4.0 HAZARD EVALUATION

Langan has preliminarily evaluated the potential hazards, physical, chemical, biological and radiological, associated with the planned field activities. Existing information, such as site history and previously conducted soil sampling, was used in this evaluation. Based on the planned field activities, the following are the potential exposure pathways that will be addressed in this HASP:

- inhalation of airborne vapors and particulates;
- dermal absorption (overall body surface and eye) due to direct skin contact with vapors and contaminated soil; and
- accidental ingestion of contaminated particles.

The following hazards are associated with the planned site activities:

Task	Hazards
Soils/Sediment Sampling	Physical, chemical, biological, and overt personnel exposure
Test Pits and Excavations	Physical, chemical, biological, and overt personnel exposure
Surveying	Physical and biological
Site Walk Throughs	Physical and biological

The types of hazards are described in the following sections.

4.1 Physical Hazards

The physical hazards associated with the field activities include the potential for being struck by falling or flying objects during surveying/sampling operations, slip/trip hazards due to wet and uneven surfaces, heat stress, overhead hazards and noise from heavy machinery, accidental excavation of underground utilities, collapsing of unstable excavations or test pits, and the potential for drowning in the lagoon and drainage ditch should someone fall into the water during sampling

activities. Heat stress is caused by a number of factors including the PPE, work load, and environmental conditions. The Langan policy on heat stress prevention is explained in Appendix A. In order to mitigate overhead hazards, hard hats shall be worn at all times while working on site. Ear protection should be worn by any personnel in close proximity to heavy equipment while it is in operation. All areas of excavation will be cleared for utilities prior to commencement of digging activities. Field inspection of test pits and areas of excavation will be conducted with extreme caution, personnel will not enter test pits unless they are four feet or less in depth. Banks more than four feet high shall be shored, laid back, or other equivalent means of protection shall be used to prevent cave-ins. Sides of trenches in unstable or soft material four feet or more in depth, shall be shored, braced, sloped, or otherwise supported to protect employees working within them. When employees are required to be in trenches four feet deep or more, an adequate means of egress, such as a ladder or steps shall also be provided so as to require no more than 25 feet of lateral travel. Should personnel be required to use boats for sediment sampling in the lagoon, these personnel will be required to wear life vests as part of their PPE.

4.2 Chemical Hazards

Chemicals of concern are known to occur in the aqueous, gaseous, and solid phase(s). Potential routes of exposure to personnel include inhalation, ingestion, and dermal absorption.

Of particular concern during planned activities is the chemical carbon disulfide. Carbon disulfide is a flammable liquid. Even at low temperatures (e.g. -22°F/-30°C) it gives off flammable vapors, which can form explosive mixtures in confined areas over a wide range of vapor/air mixtures. Products formed by combustion of carbon disulfide include sulfur dioxide and carbon monoxide which are irritating to the respiratory tract and may cause breathing difficulty and pulmonary edema. Symptoms may be delayed several hours or longer depending on the extent of the exposure. Large carbon disulfide fires are best extinguished by completely blanketing the fire area with a water fog or a water spray. Carbon dioxide (or

other inert gases) or dry chemical extinguishing agents may be used on small carbon disulfide fires.

4.3 Biological Hazards

Due to the location of the work site, along a wooded and vegetated area it is likely that insects will be encountered. Ticks in particular may pose a potential hazard to site workers.

It is suggested that workers check themselves for ticks upon leaving the site or otherwise protect themselves against exposure.

4.4 Radiologic Hazards

Based on the site history and previous environmental investigations, radioactive hazards are not likely to become a problem or hazard.

4.5 Confined Space

Confined spaces are not expected to occur during the pre-design activities. Confined space hazards include deficient oxygen content (less than 19.5%), presence of potentially explosive atmosphere, exceedence of Lower Explosive Limits (LEL) and presence of toxic vapors.

4.6 Overt Personnel Exposure

Generic and specific first aid procedures are included in this section. General first aid procedures include:

Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area at least 15 minutes, then provide appropriate medical attention. Eyewash bottles will be provided on site outside the exclusion zone, as appropriate. Eyes should be rinsed for a minimum of 15 minutes upon chemical contamination.

Inhalation: Move to fresh air and/or, if necessary, decontaminate and transport to hospital.

Ingestion: Decontaminate and transport to emergency medical facility.

Puncture Wound or Laceration: Decontaminate and transport to emergency medical facility. Site Safety Officer will provide medical data sheets to medical personnel as requested.

5.0 AIR QUALITY MONITORING

Air monitoring will be conducted during each field activity to ensure that all personnel are adequately protected from potential chemical hazards. Air monitoring for site surveying will consist of volatile organic vapor monitoring with a Photoionization Detector (PID). The PID will be an HNu model 101 with a 10.2 eV lamp and set at a 9.8 span setting. Air monitoring for field investigations, will consist of airborne particulate and volatile organic vapor monitoring.

5.1 Airborne Particulates

Work zone airborne particulate monitoring will be conducted with an MIE Miniram Aerosol Monitor Model PDM-3 or equivalent and Gilian Model HFS 513A personal air sampling pumps or equivalent. Work zones will be established during implementation of the RAP.

Personal air samples will be collected during the first full day of operations and weekly thereafter. At a minimum, two personal integrated samples will be collected on a weekly basis. These will be collected from one employee at the highest risk of exposure within the immediate work area and one employee at the highest risk of exposure outside the work area. The sample will be taken during a full shift and analyzed within a 24- to 48-hour period. The analytical parameters will be established during implementation of the RAP. The resultant concentrations will be used by the Project Health and Safety Officer and the Site Safety Officer to determine appropriate levels of personal protection.

Area airborne particulate monitoring will be conducted using a RAM-1 Portable Real-Time Aerosol Monitor with alarm, data logger, and an annular inlet modification device manufactured by MIE, Inc., or equivalent. Each monitor will be placed at the site boundary (fence) in the breathing zone, immediately downwind of the activities. Readings of 5 milligrams per cubic meter (mg/m^3) total particulates will be used as the guideline for ceasing operations. A windsock or vane will be used to determine wind directions. If the RAM-1 or Miniram malfunctions, work will stop until the malfunctioning unit is replaced. Backup aerosol monitors will be kept on site or at the project field office.

At a minimum, air monitoring data received from direct readings of aerosol monitors will be taken and recorded on a hourly basis.

Perimeter aerosol monitor readings will be recorded continuously. Hourly and complete activity time integrated averages will be recorded. All air monitoring data will be available at the field office. This data will also be submitted with the field sampling report. The frequency of these hourly checks may be increased based on the type of operations being conducted and potential dust generation.

5.2 Volatile Organic Vapors

Based on the existing site history and the maximum level of contaminants found during previous studies, it is anticipated that Level D PPE will adequately protect the workers conducting non-intrusive activities (surveying and site walk throughs) at the Halby Chemical Site. Level C protection will be used for oversight of excavation activities while keeping a minimum distance (50 feet) from the trenching operation. Level B will be used for soils/sediment sampling. Level C protection will be used for machine operators and spotters during trenching activities. The action level procedures will be established for determining the level of PPE for the workers subsequent to our review of available information and completion of tasks as defined in the RAP.

5.3 Maintenance and Calibration Procedures

The air monitoring equipment to be used on site will consist of Aerosol monitors, Gilian air pumps, and PIDs. All of these instruments will be calibrated according to the manufacturer's instructions prior to use.

6.0 PERSONAL PROTECTIVE EQUIPMENT

Each task specific level of protection required for the planned field activities is described in the following subsections.

6.1 Level D Protection

Level D protection is defined by the following protection equipment:

- hard hat;
- steel-toed and shanked boots (rubber boots or leader workboots);
- work gloves (when handling site media);
- disposable coveralls (woven Tyvek) for protection of work clothes (optional);
- safety glasses, goggles, or face shield (optional); and
- disposable ear plugs, noise reduction rating (NRR) of 35 decibels (optional).

If there is potential for dermal contact with contaminated materials, personnel will wear the following clothing:

- disposable coveralls (woven or chemical-resistant Tyvek suits) taped at the ankles; and
- inner vinyl gloves and/or outer neoprene or nitrile gloves taped at wrists (when sampling or handling potentially contaminated materials).

6.2 Level C Protection

Level C protection is defined by the following protective equipment:

- chemically resistant (Saran or PVC-coated) Tyvek suites taped at the ankles;
- inner surgical gloves and outer nitrile gloves taped at the wrists;
- disposable chemical resistant booties;
- hard hat;
- steel-toed and shanked boots;
- full-face respirator with organic vapor cartridges;
- face shield (optional); and
- disposable ear plugs, NRR of 35 decibels (optional).

6.3 Level B Protection

Level B protection is defined by the following protective equipment:

- flame retardant (Nomex™ IIIA) coveralls;
- inner surgical gloves and outer flame retardant gloves taped at the wrists;
- chemical resistant, flame retardant boots;
- hard hat;
- steel-toed and shanked boots;
- self-contained breathing apparatus (SCBA) or air line; and,
- disposable ear plugs, NRR of 35 decibels.

The following rules apply to respiratory protection:

- Respiratory protection will be in compliance with OSHA, 29 CFR 1910.134.

- At a minimum, air-purifying cartridges will be replaced daily. Cartridges will also be replaced immediately upon any signs of breakthrough (e.g., odors and physical effects) or at the Site Safety Officer's direction.

- No employee will be assigned to tasks requiring Level B or Level C protection, if based upon the health examination, the physician has determined that the employee will be unable to function normally wearing a respirator or that the safety or health of the employee may be compromised.

7.0 LEVELS OF PROTECTION

The level of PPE that will adequately protect a worker is primarily dependent, on the chemicals present, and the route of exposure. The PPE requirements will also vary according to the site activity being performed. However, all personnel will be required to wear safety shoes meeting American National Standard Institute (ANSI) requirements, (i.e. steel toed, steel shanked), and hard hats and safety glasses meeting ANSI requirements, where appropriate. The specific level of PPE that Langan considers necessary for the activities to be performed is stated in the following subsections.

7.1 Soil/Sediment Sampling

These tasks will be performed in Level B protection. However, based on air monitoring results and site conditions, the level of PPE may be downgraded, if appropriate.

7.2 Test Pits and Excavations

Operators and spotters conducting removal activities and personnel conducting delineation sampling involving test pits will perform these activities in Level C protection. Oversight personnel observing excavation activities will perform this activity in Level C protection while keeping a minimum distance of 50 feet from the trenching operation. However, if air monitoring results indicate that the action level has been met or exceeded, oversight personnel will upgrade to Level B.

7.3 Site Surveying Activities and Site Walk Throughs

A modification of Level D protection, including the disposable coveralls, has been chosen for this activity based on the current knowledge of contaminant levels and the fact that there will be minimal disturbance to the ground surface. However, if the air monitoring results indicate that the action level has been met or exceeded, then the level of PPE will be upgraded to Level C.

8.0 SITE CONTROL

The Site Safety Officer is responsible for the designation of work areas and of site access and security.

8.1 Designation of Work Areas

The Site Safety Officer will designate the exclusion zone, the contamination reduction zone, and the support zone for each activity.

8.1.1 Exclusion Zone

An Exclusion Zone (EZ) will be established in the immediate vicinity of the work area. This zone has higher potential for worker exposure to hazards and, therefore, movement into and out of this zone will be controlled. The outer boundary of this zone (the hotline) will be determined and roped off whenever feasible. Personnel entering or working in this zone will wear the required level of PPE and the rule of the buddy system will always be followed.

The criteria for designation of the EZ will be based on the necessary area needed to complete the work. The exclusion zone will be designated such that only the portions of the site where work is being performed will be monitored.

8.1.2 Contamination Reduction Zone

The Contamination Reduction Zone (CRZ) will be delineated by the Site Safety Officer. Decontamination of the PPE, personnel, tools, and equipment, along with the proper disposal of the PPE will be performed in this zone.

8.1.3 Support Zone

A Support Zone (SZ) will be established directly outside the CRZ. This area will be used to store sampling equipment and other equipment that is needed for immediate use. The support zone is accessible to supervisors for observation of the work area and to site visitors.

8.2 Site Access and Security

Since this site is located in an industrial neighborhood, site access and security will have to be monitored. All visitors to a specific work area should be reported to the Site Safety Officer and all unauthorized people should be kept at a safe distance from the designated work areas. All visitors must sign the Site Visitors Log included in the HASP (Appendix B).

Toilet facilities and potable water will available at the site.

9.0 DECONTAMINATION

The Site Safety Officer will designate the location for decontamination according to the activity being performed. Decontamination of equipment (mixing bowls and spatulas) will be performed by a decontamination laboratory.

Decontamination procedures for Level D and modified Level D protection depend on which personal protective clothing has been worn during the tasks. The decontamination procedures for Level C are as follows.

- Equipment and samples will be placed in a designated area.
- Before leaving work area, knock off all heavy soils from gloves and boots.
- Proceed to decontamination station. Step into boot wash station, wash gloves and boots, wipe off respirator and hood, if needed.
- After boot wash station, remove outer gloves and throw gloves into hazardous waste cans.
- Remove outer boots and hang on boot rack (respirator still on).
- Proceed to remove outer suit and throw into hazardous waste can.
- Remove latex inner gloves and throw into waste cans.
- Once clear of decontamination station, remove respirator and throw cartridges into hazardous waste can.
- Clean respirator and hang up to dry.
- If taking a break, wash hands and face.
- At the end of the day, take a full shower and wash hair.

Decontamination for Level B protection will follow the same procedures outlined above, except that assistance with removal of the SCBA will be provided at the equipment drop.

10.0 GENERAL WORK PRACTICES

The following work practices will be employed on-site.

- Contact lenses will not be worn in the EZ or the CRZ. All field personnel requiring corrective lenses must provide their own prescription glasses and/or lenses, which may be fitted into the respirator masks.

- No beards, sideburns, or mustaches that interfere with respirator mask seals will be permitted.

- No jewelry that interferes with protective clothing or respirator seals will be worn.

- Activities such as walking through puddles or mud, kneeling on ground, etc., will be avoided, whenever possible, to prevent contact with potentially contaminated substances.

- Field work will be conducted only during daylight hours unless adequate lighting is provided.

- Long hair and loose or dangling clothing articles that may interfere with the worker's ability to perform the tasks will not be permitted.

- The buddy system, where personnel maintain contact, will be observed at all times while in the EZ.

- Health and safety related aspects of the field activities will be documented. The documentation will also include any instances of potential chemical exposure.

- Before digging, the existence and the location of any underground utilities, (pipelines or electric lines) must be determined. The appropriate utility company(ies) will be contacted. Prior to the start of digging, a Utilities and Structures Checklist must be completed (Appendix C).

- A copy of this HASP will be kept on-site at all times for reference.

- The Site Safety Officer will inform all subcontractors of the potential hazards associated with tasks to be performed. A copy of this HASP will be made available for their review.

- A tailgate safety meeting will be conducted daily to discuss the associated hazards of tasks to be performed and the necessary PPE. This meeting will be the responsibility of the Site Safety Officer who will keep records using the Tailgate Safety Meeting Form (Appendix D).

11.0 STANDING ORDERS

11.1 Standing Orders for Exclusion Zone

- No smoking, eating, or drinking.
- No horse play.
- No matches or lighters.
- Check-in on entrance.
- Check-out on exit.
- Implement the communications system.
- Line of sight must be in position when appropriate.
- Wear the appropriate level of protection as defined in the HASP.

11.2 Standing Orders for Contamination Reduction Zone

- No smoking, eating, or drinking.
- No horse play.

- No matches or lighters.
- Wear the appropriate level of protection.

12.0 EMERGENCY RESPONSE PLAN

Langan has determined that the protocols described below are necessary during emergencies. The Site Safety Officer will inform all field personnel of emergency and evacuation procedures. The route to the hospital is provided on Figure 2. Local emergency numbers are included in Table 1.

12.1 Buddy System

The buddy system is required for all site work involving levels of protection or conditions which represent a risk to personnel.

12.2 On-Site Communications

On-site verbal communications are not expected to be a problem. However, if the level of protection is upgraded to C, the following set of hand signals should be used to communicate:

- hand gripping throat - cannot breathe;
- gripping partner's wrist or placing both hands around waist - leave work area immediately, no debates;
- hands on top of head - need assistance;
- thumbs down - no (negative); and
- thumbs up - yes (affirmative).

12.3 Job-Related Illnesses and Injuries

All job-related illnesses and injuries will be reported immediately to the Site Safety Officer. If medical attention is needed when the worker is in the EZ, the worker will be decontaminated, if possible, prior to leaving the EZ. The Site Safety Officer

will complete an Accident Report Form (Appendix E). This completed form must be forwarded to the Project Health and Safety Officer.

Local enforcement authorities (police, fire department, hospital) will be contacted and notified in advance of the planned pre-design sampling. A copy of the HASP will be provided to the fire department and hospital.

12.4 Route to Hospital

The hospital address is as follows:

St. Francis Hospital
7th and Clayton Streets
Wilmington, Delaware
(302) 421-4100

The hospital can be reached from the site via:

Terminal Thoroughfare west to Castle Road (State Route 9) North.

Castle Road to 4th Street

West on 4th Street to Washington Street

North on Washington Street to 7th Street

West on 7th Street to Clayton Street

The route to the hospital is provided on Figure 2.

12.5 Spill Containment Program

As a result of the potential hazards at the site, and the conditions under which operations are conducted, it is possible that an emergency situation such as a spill may develop.

If a spill occurs, the workers, will secure their own safety first and then will try to control or stop the spread of contamination. The Site Safety Officer will instruct a person on site to immediately contact local authorities to inform them of the possible or immediate need for neighborhood evacuation. If a significant release has occurred, the National Response Center should then be contacted at 1-800-424-8802. This group will alert National or Regional Response Teams, as

necessary. Following these emergency calls, the reporting individual should then notify the Langan Health and Safety Officer and EPA site manager.

13.0 MEDICAL SURVEILLANCE AND TRAINING

All contractor personnel must be covered by corporate medical surveillance and training programs that comply with the OSHA 29 CFR 1910.120 and pertinent contractor policy. All subcontractors are responsible for the training and medical surveillance of their own personnel.

Completion of the 40-Hour Hazardous Waste Training Program is required for all personnel who will perform work in areas where the potential for a toxic exposure exists.

Advanced training is necessary for any personnel expected to perform specialized operations on site.

Training will be provided that will specifically address the activities, procedures, monitoring, and equipment for the site operations. It will include site and facility layout, hazards, and emergency services at the site, and will detail all provisions contained within this HASP. Specific issues that will be addressed include the hazards described in Section 4. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

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TABLE 1

EMERGENCY TELEPHONE NUMBERS, HALBY CHEMICAL SITE, WILMINGTON, NEW CASTLE COUNTY, DELAWARE

AGENCY	PHONE NUMBER
For all emergencies in the Wilmington area	911
Wilmington Fire Department	(302) 571-4414
Wilmington Police Department	(302) 571-4512
St. Francis Hospital	(302) 421-4100

APPENDIX A

HEAT STRESS GUIDELINES

APPENDIX A
HEAT STRESS GUIDELINES

OVERVIEW

Heat stress is caused by a number of interacting factors, including environmental conditions, personal protective equipment, work load, and the individual characteristics of the worker. This section provides guidance in recognizing the symptoms of heat stress and in implementing preventive measures to minimize worker's exposure.

REGULATORY GUIDANCE

Currently there are no federal regulations pertaining specifically to heat stress. However, guidance is provided by many individual groups and agencies and includes the American Conference of Governmental Industrial Hygienists (ACGIH), National Institute of Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), U.S. Coast Guard (USCG), and U.S. Environmental Protection Agency (USEPA).

PERTINENT ISSUES

Each individual has different susceptibilities to heat stress due to many factors. These factors include age, physical fitness, degree of acclimatization, and the specific task being performed. Symptoms of heat stress are divided into five general categories as follows:

1. Behavioral Disorders: A worker suffering from heat fatigue demonstrates symptoms such as the inability to concentrate, impaired performance, and loss of coordination.

2. Skin Eruptions: Profuse tiny raised red vesicles (blister-like) on affected areas, prickling sensation during heat exposure, prickly heat. Extensive areas of the skin that do not sweat upon heat exposure, but present a goose-flesh appearance that subside with cool environments.

3. Heat Exhaustion: This is a condition which results from extensive water and/or salt depletion. Symptoms include fatigue, nausea, headaches, giddiness, clammy skin, pale complexion, and fainting. Heat cramps are also a symptom of heat exhaustion. These painful spasms of muscles (arms, legs, or abdominal) can occur during or after work hours.

4. Heat Syncope: Symptoms associated with this stage of heat stress include the individual fainting while standing erect and the individual becoming immobile.

5. Heat Stroke: Symptoms usually associated with heat stroke are hot dry skin, usually red, mottled, or blue. Additional symptoms include confusion, loss of consciousness, and convulsions.

To minimize employees' exposures to heat stress, it is important for field personnel to recognize the early signs and symptoms of heat stress so that preventive measures can be taken. Preventive measures include work schedule adjustment, rotating personnel, and selection of personal protective equipment.

1. Adjustment of Work Schedules: In environments of extreme heat and humidity, work schedules should be modified. Heavy work should be conducted during the cooler hours of early morning or early evening when the ambient temperature is usually lower. During the hotter temperatures, usually associated with mid-day, light work tasks should be performed whenever possible. Subcontractors should be informed of the potential for adjusted work schedules.

2. Rotation of Personnel: By alternating job functions, a single worker may not be overstressed or overexerted as a result of performing heavy tasks throughout the day.

3. Increase in Rest Periods: In extreme environmental conditions, the number of rest periods should be increased. Shaded areas or air conditioned facilities (trailer, cars, buildings) should also be provided for these rest periods so that workers can adequately recover.

Bodily fluids should also be maintained at normal levels. A good guide to follow is for every ounce lost in sweat, the fluid intake should equal that amount. Water is recommended as the fluid of choice (no salt should be administered). Field showers or hose-down areas should be provided to reduce body temperature.

In choosing protective clothing, the insulating properties should be as low as possible while still providing the protection against chemical hazards. Water chill vests and ice vests are also available and can be used effectively to minimize the effects of heat stress.

APPENDIX B

SITE VISITORS LOG

APPENDIX B

SITE VISITORS LOG

VISITOR REVIEW OF SITE HEALTH AND SAFETY PLAN			
THE UNDERSIGNED VISITORS REQUIRE ENTRANCE TO THE EXCLUSION ZONE AND HAVE THOROUGHLY READ THE HEALTH AND SAFETY PLAN, UNDERSTAND THE POTENTIAL HAZARDS AT THE SITE AND THE PROCEDURES TO MINIMIZE EXPOSURE TO THE HAZARDS, WILL FOLLOW THE DIRECTION OF THE SITE HEALTH AND SAFETY OFFICER, AND WILL ABIDE BY THE HEALTH AND SAFETY PLAN.			
NAME (PRINT)	COMPANY	DATE	SIGNATURE

APPENDIX C

UTILITIES AND STRUCTURES CHECKLIST

UTILITIES AND STRUCTURES CHECKLIST

Project: _____ Prepared by: _____

Location: _____ Date: _____

Instructions. This checklist has to be completed by a staff member as a safety measure to insure that all und utility lines, other underground structures as well as above-ground power lines are clearly marked out in the area for boring or excavation. DRILLING OR EXCAVATION WORK MAY NOT PROCEED UNTIL LINES ARE MARK THIS CHECKLIST HAS BEEN COMPLETED. Arrangements for underground utility markouts are best made at th the preliminary site visit to allow client and/or utility company sufficient time. Keep completed checklist and mar send copy to Project Manager.

Assignment of Responsibility. Client is responsible for having underground utilities and structures located and Preferably, the utilities themselves should mark out the lines.

Drilling or Excavation Sites. Attach a map of the property showing the proposed drilling or excavation site (or if widely separated, several maps) clearly indicating the area(s) checked for underground utilities or underground s and the location of above-ground power lines.

Utilities and Structures

Type	Not Present	Present	How Marked?[1]
Petroleum products line			
Natural gas line			
Steam line			
Water line			
Sewer line			
Storm drain			
Telephone cable			
Electric power line			
Product tank			
Septic tank/drain field			
Overhead power line			

1) Flags, paint on pavement, wooden stakes, etc.

Name and affiliation of person who marked out underground lines or structures.

_____ NAME _____ ORGANIZATION _____ PHONE

Emergency Procedures

Persons at site or facility to contact in case of emergency

1. _____ Phone _____

2. _____ Phone _____

Fire Dept.: Phone _____ Ambulance: Phone _____

Utility: Phone _____ Utility: Phone _____

Utility: Phone _____ Utility: Phone _____

Directions to nearest hospital (describe or attach map).

APPENDIX D

TAILGATE SAFETY MEETING FORM

TAILGATE SAFETY MEETING

Prepared by _____
Client _____ Project _____
Date _____ Project Number _____
Work Location _____
Type of Work to be Done _____

SAFETY TOPICS PRESENTED

Chemical Hazards _____
_____
Physical Hazards/Underground Utilities _____
_____
Protective Clothing/Equipment _____
_____
Special Equipment _____
Emergency Procedures _____
_____
Hospital/Clinic _____ Phone ( )_____
Paramedic Phone ( )_____
Hospital Address _____
Other _____

ATTENDEES

NAME PRINTED	SIGNATURE

Meeting Conducted by _____ _____
Name Printed Signature

Note: This tailgate safety form must be completed daily.

APPENDIX E

ACCIDENT REPORT FORM

EMPLOYEE EXPOSURE/INJURY INCIDENT REPORT
(Submit a Separate Report for Each Incident)

Date: _____

Employee's Name: _____ Employee No: _____

Sex: M _____ F _____ Age: _____

Region: _____ Location: _____

Project: _____ Project No: _____

Incident: _____

Type: Possible Exposure _____ Exposure _____ Physical Injury _____

Location: _____

Date of Incident: _____ Time of Incident: _____

Date of Reporting Incident: _____

Person to Whom Incident was Reported: _____

Weather Conditions During Incident: Temperature _____ Humidity _____

Wind Speed and Direction: _____ Cloud Cover: _____

Clear: _____ Precipitation: _____

Materials Potentially Encountered: _____

Chemical (give name of description - liquid, solid, gas, vapor, fume, mist):

_____

_____

Radiological: _____

Other: _____

Nature of the Exposure/Injury: (State the nature of the exposure/injury in detail and list the parts of the body affected. Attach extra sheets if necessary).

_____

_____

_____

_____

_____

_____

Did you receive medical care? Yes _____ No _____ If so, when _____

Where? On Site _____ Off Site _____

By Whom: Name of Paramedic: _____

Name of Physician: _____

Other: _____

If "Off Site," name facility (hospital, clinic, etc.):

_____

Length of stay at the facility? _____

Was the Regional Health and Safety Manager contacted? Yes ___ No ___ When? ___

Was the ICF HSO or Contract Occupational Health Physician contacted?

Yes ___ No ___

If so, who was the contact? _____

Did the exposure/injury result in permanent disability? Yes _____ No _____

If so, explain: _____

_____

_____

_____

Has the employee returned to work? Yes _____ No _____

If so, give date: _____

List the names of other persons affected during this incident:

_____

_____

_____

_____

_____

_____

List the names of persons who witnessed the exposure/injury incident?

_____

_____

_____

_____

_____

_____

Possible Cause of the Exposure/Injury Incident?

What was the name and title of the field team leader or immediate supervisor at the site of the incident? _____

Was the operation being conducted under an established Safety Plan?

Yes _____ No _____ If yes, attach a copy. If no, explain

Describe protective equipment and clothing used by the employee:

Did any limitations in safety equipment or protective clothing contribute to or affect exposure? If so, explain:

What was the employee doing when the exposure/injury occurred? (Describe briefly as "Site Reconnaissance," "Site Categorization," "Sampling," etc.)

Where exactly on site or off site did the exposure/injury occur?

How did the exposure/injury occur? (Describe fully what factors led up to and/or contributed to the incident):

Name of person(s) initiating report, job title, phone number:

Employee Signature _____ Date _____

Site Health and Safety Coordinator Signature _____ Date _____